

REMARKS

Claims 1-21 and 28-34 are pending in this application, with claims 6-7, 11-21 and 29-30 being withdrawn. Claim 1 has been amended herein. Applicant respectfully submits that each of these claims is allowable over the references of record.

The present application includes two independent claims, claims 1 and 28. Applicant respectfully submits that both of these, as well as the claims that depend therefrom, are allowable over the references of record. Each of the independent claims will be discussed in turn.

Claim 1 has been rejected under 35 U.S.C. § 103(a) as being unpatentable over Nishiyama (U.S. Patent No. 6,107,685, hereinafter "Nishiyama"), in view of Joshi et al. (U.S. Patent No. 6,731,003, hereinafter "Joshi") and also over Nishiyama, in view of Matsuda et al. (U.S. Patent No. 5,666,270, hereinafter "Matsuda"). Applicant respectfully traverses these rejections.

Claim 1 specifically recites "a plurality of functional 3-D structures disposed on the surface of the wafer, each functional 3-D structure including a non-conductive compliant base element." The Final Rejection states that Nishiyama teaches a 3-D structure including a compliant base in the middle portion of wafer 20 in Figures 2A and 2B. Nishiyama, however, teaches solder bumps 21, which do not include any compliant base element. Col. 7, line 40. In response to this argument, the Final Rejection points to bumps 31. These bumps are very clearly solder (col. 8, lines 17-19) and are not a compliant base material.

Claim 1 further recites "a plurality of reroute traces, each reroute trace extending over the surface of the wafer between a bond pad and its associated laterally-spaced 3-D

structure such that each reroute trace is electrically connected to one of the bond pads and extends onto the upper surface of the associated laterally-spaced one of the functional 3-D structures so that the reroute trace provides an electrical connection between the bond pad and the upper surface of the associated functional 3-D structure." The references of record do not teach or suggest the limitations of claim 1.

First, the re-arrangement wires 27 of Nishiyama clearly do not extend onto the upper surface of the copper bumps 32. This fact is not disputed. Rather, the Final Rejection points to adhesion layer 24 and oxidation resistant layer 26 of Joshi or the conductive film 36 of Matsuda. Neither of these layers, however, extend over the surface of the wafer between a bond pad and an associated laterally-spaced function 3-D structure. In both Joshi and Matsuda, the pad is beneath the bump, not laterally spaced as required by the claim. Therefore, it is respectfully submitted that claim 1 is allowable over the references of record.

Claims 2-21 and 34 depend from claim 1 and add further limitations. It is respectfully submitted that these dependent claims are allowable by reason of depending from an allowable claim as well as for adding new limitations. Since claim 1 is clearly generic with respect to its dependent claims, Applicant respectfully requests allowance of the withdrawn claims.

Claim 28 has been rejected under 35 U.S.C. § 103(a) as being unpatentable over Nishiyama (U.S. Patent No. 6,107,685, hereinafter "Nishiyama"), in view of Joshi et al. (U.S. Patent No. 6,731,003, hereinafter "Joshi"). Applicant respectfully traverses this rejection.

Claim 28, as previously presented, specifically recites "a plurality of functional 3-D structures disposed on the wafer, each functional 3-D structure including a compliant base element and having a first height." As discussed above, neither Nishiyama nor Joshi teach or suggest a compliant base element. Neither Nishiyama's solder bumps 21 nor Joshi's plated copper bump 30 includes a compliant base element. Since the references alone do not teach the claimed invention, the combination cannot teach the claimed invention.

Further, claim 28 specifically recites that "each of the other 3-D structures [has] a second height that is greater than the first height." To show this limitation, the Office Action points to Figures 2A-2B of the Nishiyama reference. This conclusion, however, directly contradicts the reference itself. In describing the Figures 2A and 2B, Nishiyama very explicitly states that "it is *extremely important to make the heights of the bumps equal to each other.*" Col. 7, line 64 (emphasis added). See also col. 6, line 51 ("it is *essential that the heights formed on the land terminals are equal to each other*"). With respect to Figures 3A to 3D, Nishiyama goes on to "show steps of forming land terminals with bumps in such a manner that *the heights of bumps are equal to each other.*" Col. 7, line 66 (emphasis added).

Applicant notes that Figures 1B and 2B appear to show that some bumps have a greater height than other bumps. The MPEP makes clear, however, that *proportions of features in a drawing are not evidence of actual proportions* when drawings are not to scale. MPEP § 2125 (emphasis added). The drawings must be evaluated for what they reasonably disclose and suggest to one of ordinary skill in the art. *Id.* When the reference does not disclose that the drawings are to scale and is silent as to dimensions, *arguments*

based on measurement of the drawing features are of little value. Id. (emphasis added).

In this case, the reference is not silent as to dimensions. Quite to the contrary, it very explicitly states that it is extremely important to make the heights of the bumps equal to each other.

Applicant made this argument in the previous response. The final rejection responded by once again pointing to lands 22a and reinforcement bumps 23 and stating that "each of the other 3-D structures having a second height that is greater than the first height (a plurality of bumps that are arranged in the middle portion of the wafer 20 have first height)." The rejection points to column 7, lines 35-55. This portion states:

FIGS. 1A and 1B show a semiconductor part according to one embodiment of the present invention, in which a plurality of land terminals 22 provided with bumps 21 are arranged on the surface of an LSI chip 20. It should be noted that in this figure, re-arrangement wires and the like are not shown.

A group of the land terminals 22 provided with bumps 21 are classified into large-diameter land terminals 22a with bumps arranged in one row with a pitch of 0.8 mm on the outermost peripheral side of the surface of the LSI chip 20; intermediate-diameter land terminals 22b with bumps arranged in one row with a pitch of 0.65 mm inwardly from the large-diameter land terminals 22a with bumps; and small-diameter land terminals 22c with bumps arranged in two rows with a pitch of 0.5 mm inwardly from the intermediate-diameter land terminals 22b with bumps. The total number of the terminals or pins is 136. On the contrary, if land terminals with bumps, each having the same diameter, are arranged in four rows with a pitch of 0.8 mm, the total number of the pins is as very small as 96. In FIG. 1A, reference numeral 23 designate reinforcing bumps provided at four corners of the surface of the LSI chip 20.

While this portion discusses the pitch and the diameter of the various bumps, it never discusses the height. Rather, one must look to the next paragraph, which very clearly and unambiguously states that "[i]n the above embodiments [i.e., the embodiment of Figs. 1A and 1B and the embodiment of Figs. 2A and 2B], which are different from each other in terms of the arrangement pitch of the land terminals with bumps, *it is*

extremely important to make the heights of the bumps equal to each other." Col. 7, line 64 (emphasis added).

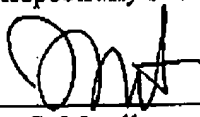
Applicant respectfully submits that the text of the reference explicitly states that it is extremely important and essential to make the heights of bumps equal to each other. The law explicitly states that the text takes precedent over a drawing that is not to scale. As a result, claim 28 is allowable over the references of record.

Claims 29-33 depend from claim 28 and add further limitations. It is respectfully submitted that these dependent claims are allowable by reason of depending from an allowable claim as well as for adding new limitations. Since claim 28 is clearly generic with respect to the withdrawn dependent claims, allowance of these claims is also requested.

Applicant further submits that the claims are in condition for allowance. No new matter has been added by this amendment. If the Examiner should have any questions, please contact Applicant's attorney at the number listed below. In the event that the enclosed fees are insufficient, please charge the same, or credit any overpayment, to Deposit Account No. 50-1065.

11/28/06
Date

Respectfully submitted,


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